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## EVALUATION OF FUNGICIDES FOR CONTROL OF SNAP BEAN RUST IN TENNESSEE

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Rust, Uromyces phaseoli, has been the major foliage disease of snap beans in Tennessee. Rust control trials have been conducted annually at the University of Tennessee Plateau Experiment Station near Crossville for several years. In 1984, snap beans of the rust susceptible Eagle cultivar were planted in 4 row plots, each 6.1 m long and 1 m apart. Except for fungicide treatments, all cultural practices were standard for the area. Plot design was randomized complete block with 4 replications.

Planting date was July 24. Fungicide treatments (Table 1) on the 7 day frequency were applied on Aug. 17, Aug. 23, Aug. 31 and Sept. 6. Those on the 14 day schedule were applied on Aug. 17 and Aug. 31. Plots were rated for rust on Sept. 13 using the Cobb scale for pustule density. The two center rows of each plot were harvested for yield ratings on Sept. 20. Crop injury ratings were made at harvest.

Table 1 shows that propiconazol (tilt) caused severe crop injury. Moderate crop injury occurred with use of RH-3866 and trizdimefon (Bayleton). Slight crop injury was observed with bitertanol (Baycor) on the 7 day frequency but not at the 14 day frequency. Crop injury was likely more severe because of plant stunting due to root rot and dry weather. Plots were not irrigated.

Table 1. Effect of chemical treatments on crop injury, yield and rust rating using the Cobb scale.

| Treatment | Rate-ai kg/ha.[x] | Frequency-Days | % Crop Injury | Yield-kg/ha. | Rust rating-Cobb scale |
|---|---|---|---|---|---|
| maneb | 1.80 | 7 | 0 f[z] | 2324 ab | 3.50 b |
| RH-3866 | 0.13 | 7 | 32 b | 1179 cd | 0.50 c |
| RH-3866 | 0.28 | 14 | 26 bc | 1078 d | 0.25 c |
| propiconazol | 0.84[y] & 0.56 | 14 | 55 a | 943 d | 0.25 c |
| trizdimefon | .014 | 7 | 22 cd | 979 d | 1.00 c |
| trizdimefon | .014 | 14 | 15 de | 1718 bc | 3.25 b |
| bitertanol | .057 | 7 | 12 e | 2324 ab | 0.50 c |
| bitertanol | .057 | 14 | 0 f | 2391 a | 3.50 b |
| check | ---- | -- | 0 f | 741 d | 6.25 a |

[x] Applied in 86 l. of water/ha.

[y] 0.84 rate for first application, 0.56 rate for second application

[z] Mean separation within columns by Duncan's multiple range tests, 5% level.

Yields were highest with maneb (Dithane M22), Trizdimefon at the 14 day frequency and bitertanol at 7 and 14 day frequencies. Yields of the check plots were low due to the rust severity. Yields were reduced severely due to crop injury with treatments of RH-3866, propiconazol and trizdimefon (7 day frequency).

The rust rating was highest with the check plot and rust was very heavy as supported by low yields of the check plot. Rust ratings were intermediate with the treatments of maneb, trizdimefon (14 day frequency) and bitertanol (14 day frequency). Treatments that had the lowest leaf rust severity cause considerable crop injury. Rates and frequency studies are needed for RH-3866, propiconazol, trizdimefon and bitertanol. These 4 chemicals are not labeled for use on snap beans. Maneb is the only satisfactory fungicide labeled for rust control of snap beans in Tennessee.